	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	1698684	active adj matrix display	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 11:51
2	BRS	L2	19675	"semiconductor film"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 11:51
3	BRS	L3	216568	crystallized or crystallization or crystalizing	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 11:51
4	BRS	L4	3021	"semiconductor energy laboratory"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 11:52
5	BRS	L5	1497	1 and 2 and 3 and 4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 11:52

	Type	L #	Hits	Search Text	DBs	Time Stamp
6	BRS	L6	0	1 same 2 same 3 same 4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 11:52
7	BRS	L7	254	1 same 2 same 3	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 11:53
8	BRS	L8	109	7 and 4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 11:53

	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L9	155	fluorocarbon adj gas and carrier adj gas	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 13:02
2	BRS	L10	52	interconnect and semiconductor and (fluorocarbon adj gas and carrier adj gas)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 13:02
3	BRS	L11	38	(nitrogen or oxygen or argon or helium or hydrogen) and hydrogen and 10	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 13:03
4	BRS	L12	1	organosilicate and barrier adj layer and 11	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 13:04
5	BRS	L13	0	second adj organosilicate and 11	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 13:04

	Type	L #	Hits	Search Text	DBs	Time Stamp
6	BRS	L14	1161	organosilicate	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 13:04
7	BRS	L15	95	fluorocarbon and organosilicate	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 13:04
8	BRS	L16	10	second adj organosilicate	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/11/04 13:05

	Type	L #	Hits	Search Text	DBs	Time Stamp
9	BRS	L17	39	("4262631" | "4532150" | "4634601" | "4759947" | "4894352" | "5238866" | "5296258" | "5419783" | "5441914" | "5465680" | "5591566" | "5880018" | "5948928" | "5989998" | "6020458" | "6051321" | "6054379" | "6060132" | "6068884" | "6107184" | "6140226" | "6147009" | "6171945" | "6184128" | "6211040" | "6245690" | "6258735" | "6287990" | "6303523" | "6312793" | "6348725" | "6365527" | "6437443" | "6441491" | "6479110" | "6488176" | "6497963" | "6521546" | "6558756" | "2001/0004479" | "2001/0005546" | "2002/0045361" | "2002/0098714" | "2003/0049460" | "2003/0064154").PN.	USPAT	2004/11/04 13:05
10	BRS	L18	5	("5817572" | "5970336" | "6030901" | "6072227" | "6168726").PN.	USPAT	2004/11/04 13:06
11	BRS	L19	16	("5266157" | "5970376" | "6037255" | "6040248" | "6069091" | "6080529" | "6105588" | "6143476" | "6153511" | "6174796" | "6194128" | "6265319" | "6265320" | "6291334" | "6331380" | "6342446").PN.	USPAT	2004/11/04 13:06
12	BRS	L20	8	6342446.URPN.	USPAT	2004/11/04 13:07

US-PAT-NO: 6777171

DOCUMENT-IDENTIFIER: US 6777171 B2

TITLE: Fluorine-containing layers for damascene structures

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Brief Summary Text - BSTX (20):
In another integrated circuit fabrication process, an organosilicate material may be used as the first and second dielectric layers in the dual damascene structure. For such an embodiment, a preferred process sequence includes depositing a barrier layer on a metal layer formed on a substrate. After the barrier layer is deposited on the substrate a first organosilicate layer is formed thereon. A hard mask layer is formed on the first organosilicate layer. The hard mask is patterned to define vias therein. Thereafter, a **second organosilicate** layer is formed on the patterned hard mask layer. The **second organosilicate** layer is patterned to define interconnects therein. The interconnects formed in the **second organosilicate** layer are positioned over the vias defined in the hard mask layer. After the **second organosilicate** layer is patterned, the vias defined in the hard mask layer are transferred into the first organosilicate layer. Thereafter, the dual damascene structure is completed by filling the vias and interconnects with a conductive material.

Detailed Description Text - DETX (119):
Referring to FIG. 9e, after the hard mask layer 906 is patterned, a **second**

organosilicate layer 908 is deposited thereover. The **second organosilicate** layer 908 is deposited according to the process parameters described above.
The thickness of the **second organosilicate** layer 908 is variable depending on the specific stage of processing. Typically, the **second organosilicate** layer 908 has a thickness of about 5,000 .ANG. to about 10,000 .ANG..

Detailed Description Text - DETX (120):
The **second organosilicate** layer 908 is then patterned to define interconnect lines 910, as illustrated in FIG. 9f, preferably using conventional lithography processes described above. The interconnect lines 910 formed in the **second organosilicate** layer 908 are positioned over the via openings 906H formed in the hard mask layer 906. Thereafter, as shown in FIG. 9g, the vias 906H are transferred through the first organosilicate layer 905 and the barrier layer 904 by etching them using reactive ion etching or other anisotropic etching techniques.

Detailed Description Text - DETX (122):
Additionally, a barrier layer 916 such as tantalum (Ta), tantalum nitride (TaN), or other suitable barrier material may be deposited conformably on the sidewalls of the interconnect lines 910 and the vias 906H, before filling them with the conductive material 914, to prevent metal migration into the surrounding first and **second organosilicate** layers 905, 908, as well as the barrier layer 904 and the hard mask layer 906.